

WHAT IS CLAIMED IS:

1. A system for fabricating a semiconductor component on a substrate comprising:

5 a plate comprising at least one cavity configured to mold a body segment of the component on the substrate and having at least one corner;

an inlet runner on the plate configured to direct a molding compound into the cavity;

10 a corner runner on the plate configured to direct the molding compound through the corner; and

a vent on the plate in flow communication with the cavity.

15 2. The system of claim 1 wherein the corner includes orthogonal surfaces and the corner runner is configured to direction the molding compound generally parallel to one surface and generally perpendicular to another surface.

20 3. The system of claim 1 wherein the substrate comprises a leadframe and the component comprises a semiconductor package.

25 4. The system of claim 1 further comprising a second plate having a second cavity configured to mold a second body segment on an opposing surface of the substrate, a second inlet runner, a second corner runner and a second vent.

30 5. The system of claim 1 wherein the plate comprises a plurality of cavities having a plurality of corners configured to mold a plurality of body segments for a plurality of components on the substrate, and a plurality of corner runners configured to direct the molding compound through the corners.

6. The system of claim 1 further comprising a transfer molding apparatus configured to press the plate against the substrate and to inject the molding compound into the inlet runner.

7. The system of claim 1 further comprising a dummy cavity on the plate configured to mold a dummy segment on the substrate, the dummy cavity in flow communication with the cavity and the air vent.

8. A system for fabricating semiconductor components on a substrate comprising:

a plate comprising a plurality of mold cavities configured to mold body segments for the components on the substrate, the cavities having a plurality of corners;

an inlet runner on the plate configured to direct a molding compound into the cavities;

a corner runner on the plate configured to direct the molding compound through the corners and to prevent air in the molding compound from accumulating in the corners; and

a vent on the plate in flow communication with the cavities.

9. The system of claim 8 further comprising a second plate configured for mating engagement with the plate, the second plate comprising a plurality of second mold cavities configured to mold second body segments on an opposing surface of the substrate and having a plurality of second corners, and a second corner runner configured to direct the molding compound through the second corners.

10. The system of claim 8 wherein each corner comprises orthogonal surfaces and the corner runner is configured to

direct the molding compound in a direction generally parallel to one of surface and generally perpendicular to another surface.

5        11. The system of claim 8 wherein the components comprise semiconductor packages comprising a plurality of dice and the body segments encapsulate the dice.

10        12. The system of claim 8 wherein the substrate comprises a leadframe and the components comprise semiconductor packages.

15        13. The system of claim 8 further comprising a transfer molding apparatus configured to press the plate against the substrate and to inject the molding compound into the inlet runner.

20        14. The system of claim 8 further comprising a mold compound source in flow communication with the inlet runner.

25        15. The system of claim 8 further comprising a dummy cavity in flow communication with the cavities and the single vent configured to mold a dummy segment on the surface of the substrate.

30        16. A system for fabricating semiconductor components on a substrate comprising:

      a plate comprising a plurality of mold cavities configured to mold body segments for the components on the substrate;

      a first runner on the plate configured to direct a molding compound into the cavities;

a second runner on the plate configured to direct the molding compound through the cavities and to prevent air in the molding compound from accumulating in the cavities;

a dummy cavity in flow communication with the first runner and the second runner configured to receive the air; and

a vent on the plate in flow communication with the dummy cavity.

10 17. The system of claim 16 further comprising a second plate substantially identical to the plate configured to mold second body segments for the components on an opposing surface of the substrate.

15 18. The system of claim 16 further comprising a connecting runner between the cavities and a second dummy cavity in flow communication with the connecting runner configured to mold a second dummy segment on the substrate.

20 19. The system of claim 16 wherein the plurality of mold cavities comprises a pair of cavities.

20. A system for fabricating semiconductor components on a substrate comprising:

25 a plate comprising a first cavity configured to mold a first component the substrate and a second cavity configured to mold a second component on the substrate;

an inlet runner on the plate configured to direct a molding compound into the first cavity;

30 a first corner runner on the plate configured to direct the molding compound through a first corner of the first cavity;

a connecting runner on the plate configured to direct the molding compound from the first cavity to the second cavity;

5 a second corner runner on the plate in flow communication with the connecting runner configured to direct the molding compound through a second corner of the second cavity;

a dummy cavity in flow communication with the second cavity and the second corner runner; and

10 a vent on the plate in flow communication with the dummy cavity.

15 21. The system of claim 20 wherein the substrate comprises a leadframe and the components comprise semiconductor packages.

20 22. The system of claim 20 wherein the substrate comprises a leadframe and the components comprise thin small outline packages.

23. A system for fabricating semiconductor components on a substrate comprising:

25 a plate comprising at least one pair of cavities configured to receive a molding compound and to mold body segments of the components on a surface of the substrate, the cavities having a plurality of corners;

a plurality of corner runners on the plate configured to direct the molding compound through the corners and to prevent air from accumulating in the corners; and

30 a vent on the plate in flow communication with the cavities and the corner runners.

24. The system of claim 23 further comprising a dummy cavity on the plate in flow communication with the cavities

the corner runners and the vent, configured to mold a dummy segment on the substrate.

25. The system of claim 23 further comprising a second  
5 plate substantially identical to the plate configured to mold the body segments on an opposing surface of the substrate.

26. A method for fabricating semiconductor components on a substrate comprising:

10 providing a plate comprising a plurality of cavities configured to receive a molding compound and to mold body segments of the components on a surface of the substrate, the cavities having a plurality of corners;

15 providing a plurality of corner runners on the plate configured to direct the molding compound through the corners and to prevent air from accumulating in the corners;

providing a vent on the plate in flow communication with the cavities and the corner runners;

20 injecting the molding compound into the cavities and molding the body segments on the surface; and

venting the air through the vent during the injecting step.

25 27. The method of claim 26 further comprising providing a dummy cavity on the plate in flow communication with the corner runners and the vent, then collecting the air in the dummy cavity and venting the air through the vent.

30 28. The method of claim 26 wherein the corners include orthogonal surfaces and the corner runners are configured to direct the molding compound generally parallel to and generally perpendicular to the orthogonal surfaces.

29. The method of claim 26 wherein the substrate comprises a leadframe and the components comprise semiconductor packages.

5 30. A method for fabricating a semiconductor component on a substrate comprising:

providing a plate comprising a cavity configured to receive a molding compound and to mold a body segment of the component on the substrate, the cavity having a corner;

10 providing a runner on the plate configured to direct the molding compound through the corner and to prevent trapped air in the molding compound from accumulating in the corner;

providing an air vent on the plate in flow communication with the runner; and

15 molding the body segment to the substrate using the cavity with the runner directing the molding compound through the corner and the trapped air to the air vent and with the air vent venting the trapped air.

20 31. The method of claim 30 further comprising providing a dummy cavity on the plate in flow communication with the cavity and the air vent configured to mold a dummy segment on the substrate and then molding the dummy segment during the molding step.

25 32. The method of claim 30 further comprising providing a second cavity on the plate in flow communication with the air vent the cavity and a second runner configured to direct the molding compound through a second corner of the second  
30 cavity, then molding a second body segment for a second component on the substrate using the second cavity and the second runner.

33. The method of claim 30 wherein the substrate comprises a leadframe and the component comprises a semiconductor package.

5 34. A method for fabricating a semiconductor component on a substrate comprising:

providing a plate comprising a cavity configured to mold a body segment for the component on a surface of the substrate and having a corner;

10 providing an inlet runner on the plate configured to direct a molding compound into the cavity;

providing a corner runner on the plate configured to direct the molding compound through the corner and to prevent trapped air in the molding compound from accumulating in the corner;

15 providing a dummy cavity on the plate configured to mold a dummy segment on the substrate;

providing an air vent on the substrate in flow communication with the dummy cavity; and

20 molding the body segment and the dummy segment on the substrate using the cavity with the corner runner directing the trapped air into the dummy cavity and the air vent venting the trapped air.

25 35. The method of claim 34 wherein the substrate comprises a leadframe and the component comprises a semiconductor package.

30 36. The method of claim 34 further comprising providing a pair of mold cavities on the plate configured to mold body segments on the substrate for a pair of components, providing a second corner runner configured to direct the molding compound through a second corner of the second cavity, providing a connecting runner configured to direct the



molding compound between the pair of mold cavities, then molding the body segments while directing the molding compound through the second corner into the dummy cavity and venting the trapped air through the air vent.

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37. The method of claim 34 wherein the corner includes orthogonal surfaces and the corner runner is configured to direction the molding compound generally parallel to one surface and generally perpendicular to another surface.

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38. The method of claim 34 wherein the component comprises a semiconductor package comprising a die and the body segment encapsulates the die.

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39. The method of claim 34 further comprising providing a second plate substantially identical to the plate configured to mold an opposing body segment for the component on an opposing surface of the substrate then molding the opposing body segment during the molding step.

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40. The method of claim 34 further comprising providing a plurality of cavities on the plate configured to mold a plurality of body segments for a plurality of components on the substrate, the cavities having a plurality of corners and a plurality of corner runners configured to direct the molding compound through the corners then molding the body segments during the molding step.

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41. The method of claim 34 wherein the plate is mounted to a transfer molding apparatus and the molding step is performed using the transfer molding apparatus.

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42. A method for fabricating semiconductor components comprising:

providing a substrate;

providing a first plate comprising a plurality of first mold cavities configured to mold first body segments for the components on the substrate;

5 providing a first runner on the first plate configured to direct a molding compound into the first cavities;

providing a plurality of first corner runners on the first plate configured to direct the molding compound through first corners in the first cavities and to prevent air in the molding compound from accumulating in the first corners;

10 providing a vent on the first plate in flow communication with the first runner and the first corner runners; and

15 molding the first body segments to the substrate using the first cavities with the first runner and the first corner runners directing the molding compound through the first cavities, and with the air venting through the air vent.

43. The method of claim 42 further comprising:

20 providing a second plate comprising a plurality of second mold cavities configured to mold second body segments for the components on the substrate;

providing a second runner on the second plate configured to direct the molding compound into the second cavities;

25 providing a plurality of second corner runners on the second plate configured to direct the molding compound through second corners in the second cavities and to prevent the air in the molding compound from accumulating in the second corners;

30 providing a second vent on the second plate in flow communication with the second runner and the second corner runners; and

molding the second body segments to the substrate using the second cavities with the second runner and the second

corner runners directing the molding compound through the second cavities, and with the air venting through the air vent.

5           44. The method of claim 43 further comprising providing the substrate with a plurality of openings configured to direct the molding compound on opposing sides of the substrate.

10           45. The method of claim 43 wherein the substrate comprises a leadframe and the components comprise semiconductor packages.

15           46. A semiconductor component comprising:  
a substrate;  
a plurality of semiconductor dice on the substrate;  
a plurality of body segments encapsulating the dice and portions of the substrate, the body segments comprising a plurality of corners; and  
20           a dummy segment on the substrate comprising trapped air from the corners accumulated during molding of the body segments.

25           47. The semiconductor component of claim 46 wherein the substrate comprises a leadframe.

            48. The semiconductor component of claim 46 wherein the body segments comprise semiconductor packages.

30           49. The semiconductor component of claim 46 further comprising a connecting dummy segment between the body segments.

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